

## REMARKS

### I. Introduction

Claims 1-24 were pending in the present application. Claims 9, 10, 13, 14, 23, and 24 have been canceled. Claims 25-48 are added in this response. In a May 5, 2004, Office Action (herein "Office Action"), Claims 1-24 were rejected under 35 U.S.C. § 101. Claims 9, 10, 20, 23, and 24 were objected to due to informalities. Claims 1, 2, and 8-13 were rejected under 35 U.S.C. § 102(b) as being anticipated by U.S. Patent No. 5,948,061, to Merriman et al. ("Merriman"). Claims 3-7 and 14-24 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Merriman in view of U.S. Patent No. 5,937,392, to Alberts ("Alberts").

### II. Claim Objections

Claims 9, 10, 20, 23, and 24 were objected to due to informalities. Referring first to Claim 20, the Office Action asserts that Claim 20 sets forth a limitation that is already present in base Claim 19. However, Claim 19 only requires that "each array element correspond[] to a fixed time period and wherein the sum of the array element time periods equal the time period for generating the delivery goal." According to that limitation, each array element may be any fixed length of time as long as the sum of the array element time periods equals the time period for generating the delivery goal. For example, if the time period for generating the delivery goal is nine hours, one array element may be three hours, another array element five hours, and another one hour. Each of those array elements has a fixed time period (three hours, five hours, and one hour), and the sum of those time periods (nine hours) equals the time period for generating the delivery goal (nine hours).

In contrast, Claim 20 requires that "each array element correspond[] to an equal fixed time period." Continuing with the above example, according to Claim 20, the time period for each array element must be equal, i.e., three hours. Thus, Claim 20 further limits base Claim 19.

Accordingly, applicants submit that Claim 20 provides additional limitations to base Claim 19 and request reconsideration of the objection.

Regarding Claims 9, 10, 23, and 24, the Office Action asserts that those claims set forth dependant claims that improperly switch statutory classes and suggests that the claims be presented in independent form. As suggested, Claims 9, 10, 23, and 24 have been canceled and rewritten in independent form as Claims 25, 33, 41, and 45, and appropriate dependent claims have been added.

Accordingly, new Claims 25-48 are believed to be patentable and withdrawal of the objection is requested.

### III. 35 U.S.C. § 101 Rejection

Claims 1-24 were rejected under 35 U.S.C. § 101 as not being "within the technological arts." Additionally, Claims 19-24 were rejected under 35 U.S.C. § 101 as not setting forth a concrete, useful, and tangible result.

U.S.C. § 101 states that:

Whoever invents or discover any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, such to the conditions of this title.

The Supreme Court has construed § 101 broadly, noting that Congress intended statutory subject matter to "include anything under the sun that is made by man." *See Diamond v. Chakrabarty*, 447 U.S. 303, 309 (1980). Three categories have been identified to limit this expanse—"laws of nature, natural phenomena, and abstract ideas." *See Diamond v. Diehr*, 450 U.S. 175, 185 (1981). Additionally, a mathematical formula alone, sometimes referred to as a mathematical algorithm, viewed in the abstract, is considered unpatentable subject matter. *Id.* However, the Federal Circuit has recently stated that:

any step-by-step process, be it electronic, chemical, or mechanical, involves an 'algorithm' in the broad sense of the term. Because § 101

includes processes as a category of patentable subject matter, the judicially-defined proscription against patenting of a "mathematical algorithm," to the extent such a proscription still exists, is narrowly limited to mathematical algorithms in the abstract.

*AT&T Corp. v. Excel Communications, Inc.*, 172 F.3d 1352, 1356 (Fed. Cir. 1999).

Each of the claims of the present application has been amended to recite that the process/system claimed is implemented by a computer. Thus, each of the claims is believed to qualify as statutory subject matter under 35 U.S.C. § 101.

Regarding the rejection that Claims 19-24 do not set forth a concrete, useful, and tangible result, as noted in *State Street Bank*, the transformation of data through a series of mathematical calculations may be patentable if it produces a "useful, concrete and tangible result." *State Street Bank & Trust Co. v. Signature Financial Group*, 149 F.3d 1368, 1373 (Fed. Cir. 1998). In *State Street Bank*, the useful, concrete, and tangible result was "a final share price momentarily fixed for recording and reporting purposes and even accepted and relied upon by regulatory authorities and in subsequent trades." *Id.*

Independent Claim 19 tracks media display opportunities in a dynamic array. The dynamic array includes "a number of array elements" and each element corresponds to a fixed period of time. Additionally, as described in the application, the dynamic array is used to provide the result of monitoring and controlling the distribution of media in an effective and efficient manner. Thus, the method of Claims 19-24 provides a useful, concrete, and tangible result in producing the dynamic array that is used to track media display opportunities.

Thus, each of the claims of the present application is believed to qualify as patentable subject matter under 35 U.S.C. § 101 and withdrawal of the rejection is requested.

#### IV. Prior Art Rejections

##### 1. Introduction

Claims 1, 2, and 8-13 were rejected under 35 U.S.C. § 102(b) as being anticipated by Merriman. Claims 3-7 and 14-24 were rejected under 35 U.S.C. § 103(a) as being unpatentable

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over Merriman in view of Alberts. For the following reasons, applicants respectfully submit that Claims 1-24 are not anticipated by Merriman and are not obvious over Merriman in view of Alberts, because Merriman and Alberts, either alone or in combination, fail to teach or suggest calculating a dynamic rotation frequency that is based upon a quotient of a delivery goal and an estimated number of display opportunities. Merriman and Alberts also fail to teach or suggest a dynamic array for tracking media delivery opportunities wherein array elements of the array initially include estimated delivery opportunities and are subsequently updated to include actual delivery opportunities. Still further, Merriman and Alberts fail to teach or suggest updating the remaining array elements containing estimated delivery opportunities based upon the actual page views.

Prior to discussing more detailed reasons why applicants believe that all of the claims of the present application, as amended, are allowable over the cited references, a brief description of the present invention and the cited references is presented.

a. Summary of the Present Invention

The present invention is generally related to a system and method for dynamically managing the delivery of media, such as advertisement media. More particularly, the present application dynamically selects advertisement media to deliver by calculating a rotation frequency for several items of media. The rotation frequencies are used to calculate an advertisement priority score for each item of media. The priority score is used to select advertisement media to deliver.

In one example of the present invention, the rotation frequency may be defined in terms of the quotient between an impression goal and the number of advertisement media display opportunities (i.e., page views) encountered during an advertisement delivery campaign. The page views may be a predicted number or a combination of both a predicted number and actual page views that have occurred during the advertisement delivery campaign. For example,

assume a media campaign has an impression goal of 1,000 impressions over a campaign of 28 days. At the beginning of the campaign, embodiments of the present invention may predict the number of page views for the days to be 1,125. Based on that prediction and the impression goal of 1,000, the rotation frequency may be calculated ( $1000/1125 = 0.8888889$ ).

Using that rotation frequency, embodiments of the present invention utilize a dynamic array to manage the actual number of page views and adjust the predicted number based on the actual number to assure that the advertisement media is being delivered as desired. In particular, the dynamic array includes several array elements, each element representing a fixed period of time of the advertisement campaign. At the beginning of the advertisement campaign, each array element contains an estimated number of page views that are predicted to occur during that fixed period of time. As the campaign progresses, the estimates are replaced with the actual number of page views that occurred. Based on the actual page views, the array is dynamically adjusted to compensate for the over/under estimation from portions of the campaign that have been completed.

If there was an underestimation (i.e., more actual page views have been encountered than estimated), the dynamic array is adjusted, the dynamic rotation frequency recalculated, and based on the lower rotation frequency, the priority of the media decreases. Decreasing the priority allows other advertisements to obtain a higher priority score and be delivered as needed. Likewise, if there was an overestimation (i.e., fewer actual page views were encountered than estimated), the dynamic array is adjusted, the dynamic rotation frequency recalculated, and based on the higher rotation frequency, the priority of the advertisement media increases. Increasing the priority ensures that the media is delivered more frequently.

Numerous advantages may be realized by the system or method recited in the claims of the present application. In one aspect, advertisement media may be more effectively and efficiently delivered thereby increasing the likelihood that the impression goals for delivery

campaigns are realized. In another aspect, dynamic adjustments in the delivery of advertisements provide the ability to compensate for fluctuations in the number of page views encountered. Additional advantages may also be realized within embodiments of the present invention.

b. U.S. Patent No. 5,948,061, to Merriman et al

Merriman is purportedly directed toward a method and apparatus for targeting the delivery of advertisements over a network. In accordance with the teachings of Merriman, the method and apparatus attempts to target advertisements based on the user's preferences, how often the user has previously seen the advertisement, and how frequently the advertisement has been viewed. For advertisements that match the user's preferences and for which the user has seen less than a predetermined threshold, a satisfaction index ("SI") is calculated according to the following formula:

$$SI = \frac{n}{N} * \frac{end - start}{now - start}$$

Where:

n: =the number of times the particular advertisement has been viewed by anyone;

N: the number of times the advertisement is to be seen by anyone;

end-start: the total number of days that the advertisement is scheduled to run; and

now-start: the number of days that the advertisement has run to date.

The SI for matching advertisements is compared and the one with the smallest SI is selected.

Merriman fails to teach or suggest calculating a dynamic rotation frequency that is based upon a quotient of a delivery goal and an estimated number of display opportunities. Still further, Merriman fails to teach or suggest the use of a dynamic array, including dynamic array elements, for tracking media display opportunities. Additionally, Merriman fails to teach or

suggest populating the dynamic array elements with estimated page views, updating those array elements with actual page views, and adjusting the remaining array elements containing estimates based upon the actual page views.

c. U.S. Patent No. 5,937,392, to Alberts

Alberts is purportedly directed toward a banner advertising display system. In accordance with the teachings of Alberts, the system controls the frequency and distribution with which ads are served throughout the day. Each ad is associated with a counter (M) that has a default value. A counter value of zero indicates that the ad is to be served. A pointer cycles through the ads, decrementing each M counter as it goes, until it identifies an ad that has an M counter value of zero. Once an ad is served, its M counter value is reset to its default value. A second counter (D) is also maintained for each ad, and its value is changed each time the associated ad is served, thereby tracking the number of times the ad has been served. A third counter (A) is used to adjust the default value assigned to M when the counter is reset, thereby adjusting the frequency with which the ad will be served.

In addition to, and distinct from, maintaining counters to control the frequency and distribution of serves, Alberts also teaches that the number of hits for a particular service through which ads are served may be predicted based on the past history of that service. By predicting the number of hits to a particular service, the system of Alberts can adjust how often ads are served or what type of ads are served (e.g., paid, free, trial), to that service in response to hits. Additionally, Alberts discusses breaking up the hours in a day based upon frequency of hits to a service to alter the granularity with which hits are monitored.

In particular, Alberts describes that predicting hits is used to accommodate the situation in which the number of hits per day for a service is undersold compared to the estimated and/or actual number of hits. "For example, if a system is typically receiving 500,000 hits per day and only 250,000 hits per day have been sold, the system can insert banners for charitable

organizations, free serves on a trial basis, or public service announcements." (Alberts, Col. 6, lines 27-35.)

Alberts fails to teach or suggest calculating a dynamic rotation frequency that is based upon a quotient of a delivery goal and an estimated number of display opportunities. Still further, Alberts fails to teach or suggest the use of a dynamic array, including dynamic array elements, for tracking media display opportunities. Additionally, Alberts fails to teach or suggest populating the dynamic array elements with estimated page views, updating those array elements with actual page views, and adjusting the remaining array elements containing estimates based upon the actual page views.

2. The Claims Distinguished

a. Claims 1 and 11

For purposes of this discussion, Claims 1 and 11 will be discussed together because the limitations discussed herein are similar for each claim. Claim 1, as amended, reads as follows:

A computer implemented method for managing media delivery for a plurality of media, the method comprising:

calculating a dynamic rotation frequency for each of the plurality of media, wherein each dynamic rotation frequency is based upon a quotient of a delivery goal for a corresponding one of the plurality of media and an estimated number of display opportunities to be encountered during a predetermined period of time;

obtaining a request for media;

determining one or more of the plurality of media to deliver in response to the request, wherein the determination of the one or more of the plurality of media corresponds to a the dynamic rotation frequency of the determined one or more of the plurality of media;

outputting the one or more determined media; and

in response to outputting, dynamically adjusting the dynamic rotation frequency for the one or more output media.



Similarly, Claim 11, as amended, reads as follows:

An computer implemented advertisement media delivery system, the system comprising:

an advertisement media manager operable to:

generate new advertisement media campaigns;

calculate a dynamic rotation frequency based upon a quotient of a delivery goal for an advertisement media campaign and an estimated number of display opportunities to be encountered during the advertisement media campaign, wherein the delivery goal is obtained from the advertisement media manager;

select and deliver one or more advertisement media based on the dynamic rotation frequency; and

dynamically adjust the dynamic rotation frequency in response to selecting and delivering one or more advertisement media.

As recited above, Claims 1 and 11, as amended, describe a computer-implemented method and system for managing media delivery that includes calculating and adjusting a dynamic rotation frequency. In particular, Claim 1 includes the limitations of "calculating a dynamic rotation frequency for each of the plurality of media, wherein each dynamic rotation frequency is based upon a quotient of a delivery goal for a corresponding one of the plurality of media and an estimated number of display opportunities to be encountered during a predetermined period of time" and "in response to outputting, dynamically adjusting the dynamic rotation frequency for the one or more output media." (Emphasis added.) Similarly, the system of Claim 11 is operable to "calculate a dynamic rotation frequency based upon a quotient of a delivery goal for an advertisement media campaign and an estimated number of display opportunities to be encountered during the advertisement media campaign" and to "dynamically adjust the dynamic rotation frequency in response to selecting and delivering one or more advertisement media." (Emphasis added.) Thus, the dynamic rotation frequency of both Claims 1 and 11 is calculated "based upon a quotient of a delivery goal . . . and an estimated

number of display opportunities to be encountered." Additionally, the dynamic rotation frequency of both Claims 1 and 11 is adjusted in response to delivering media.

The system and method of Claims 1 and 11 provide the ability to effectively and efficiently manage the delivery of media. In particular, by calculating a dynamic rotation frequency for the media that is initially based upon an estimate, a delivery schedule can be determined. Additionally, by dynamically adjusting the dynamic rotation frequency in response to actually delivering media, the delivery schedule can be adjusted to accommodate for actual results that are different from those predicted.

As acknowledged in the Office Action, "Merriman et al does not teach the use of estimated impressions for starting an ad campaign scheduling frequency." (Office Action, p. 7.) Claims 1 and 11 have been amended to include the use of estimates to calculate the dynamic rotation frequency for scheduling media delivery. Accordingly, applicants submit that Merriman does not anticipate Claims 1 or 11 and request withdrawal of the § 102(b) rejection of Claims 1 and 11.

The Office Action does assert that Alberts resolves the deficiencies of Merriman by describing a system that "can predictively model the number of hits (ad opportunities) to control the distribution of ads." (Office Action, p. 7.) Therefore, the Office Action asserts that the combination of Merriman and Alberts would have been obvious to one of ordinary skill at the time of the invention to have used predictions to initiate the system of Merriman so that the initial ad frequencies are given a balanced start. (*Id.*)

In contrast to Claims 1 and 11, Alberts, like Merriman, does not describe a method or system wherein the dynamic rotation frequency is computed "based upon a quotient of a delivery goal . . . and an estimated number of display opportunities to be encountered." Alberts describes (1) controlling the frequency of distribution of served ads with respect to each other; and

(2) controlling the distribution of ads through a particular service by predicting the number of hits for the particular service based on past history of the service.

The frequency of distribution of ads with respect to each other is controlled by maintaining counters to track when and how often ads have actually been served.

To obtain efficient distribution of the ads relative to each other and throughout the day (referred to here as "rotation control"), each ad is preferably associated with at least two counters that are operated such that the system can quickly determine which ad is to be served, without intensive computational overhead.

(Alberts, Col. 1, line 66-Col. 2, line 4.) Alberts continues by describing that the counters are all based on actual usage of the ads. (See Alberts, Col. 4, line 55-Col. 5, line 18.) There is no discussion or suggestion in Alberts of the counters being estimates of the frequency of delivery of ads.

The distribution of ads through a particular service, as described in Alberts, may be accomplished by predicting the number of hits for a particular service based on prior experience. (See Alberts, Col. 6, lines 43-46.) Alberts describes that predicting hits for a particular service is desirable to enable the ability to "delay serving all paid ads or all ads of a particular type, and then only serve ads used to [sic] fill in gaps between the total number of hits and the number of paid hits. This way there may be some gaps, but the distribution is made more regular throughout the day." (Alberts, Col. 6, lines 60-65.) The prediction techniques described in Alberts are directed toward controlling the distribution of ads to a particular service, not controlling the distribution of ads themselves. Thus, there is no discussion in Alberts of computing a rotation frequency for media (e.g., ads) that is based upon an estimated number of display opportunities for the media. Alberts is limited to estimating the number of hits that are expected for a particular service and distributing ads (paid, trial, free) to that service based on the predicted number of hits.

Applicants assert that the limitations of calculating a dynamic rotation frequency based upon a quotient of a delivery goal and an estimated number of display opportunities to be encountered and dynamically adjusting the dynamic rotation frequency for the one or more output media in response to outputting media is not disclosed in Alberts. Alberts is limited to controlling the distribution of ads based on actual serves of the ads themselves (via counters) and maintaining the distribution of ads to a particular service based upon the predicted hits to the service.

Generally described, under 35 U.S.C. § 103(a), a *prima facie* case of obviousness can be established only if the cited references, alone or in combination, teach each and every element recited in the claim. *In re Bell*, 991 F.2d 781 (Fed. Cir. 1993). Merriman and Alberts, alone or in combination, fail to teach or suggest (1) calculating a dynamic rotation frequency based upon a quotient of a delivery goal and an estimated number of display opportunities to be encountered; or (2) dynamically adjusting the dynamic rotation frequency for the one or more output media in response to outputting media.

For the above reasons, applicants respectfully request withdrawal of the 35 U.S.C. § 102(b) rejection of Claims 1 and 11, and assert that Claims 1 and 11 are patentable under 35 U.S.C. § 103(a) over the combination of Merriman and Alberts.

b. Claims 2-10 and 12-18

Claims 2, 8-10, 12-13 were rejected under 35 U.S.C. § 102(b) as being anticipated by Merriman. Claims 3-7 and 14-18 were rejected under 35 U.S.C. § 103(a) as being obvious over the combination Merriman and Alberts. Claims 9, 10, 13, and 14 have been canceled. Claims 2-8 are dependent on Claim 1. Claims 12 and 15-18 are dependent on Claim 11. As discussed above, Merriman and Alberts, either alone or in combination, fail to teach or suggest each of the limitations recited in Claims 1 and 11. Accordingly, for the above-mentioned reasons, Claims 2-8, 12, and 15-18 are likewise allowable over Merriman and Alberts, either

alone or in combination. In addition, Claims 2-8, 12, and 15-18 further add to the patentability of the claims.

c. Claim 19

Claim 19 was rejected under 35 U.S.C. § 103(a) as being unpatentable over Merriman in view of Alberts. Claim 19 reads as follows:

A computer implemented method for tracking media display opportunities in a dynamic array for an item of media, wherein the dynamic array includes a number of array elements, the method comprising:

obtaining a media delivery campaign including a media delivery goal, a target market segment, and data indicative of a time period for generating the delivery goal;

selecting a number of array elements for the dynamic array, wherein each array element corresponds to a fixed time period and wherein the sum of the array element time periods equal the time period for generating the delivery goal;

populating each array element with an estimated number of display opportunities for the time period represented by array element; and

dynamically replacing the estimated number of display opportunities with an actual number of media display opportunities encountered.

As recited above, Claim 19 describes a method for tracking media display opportunities in a dynamic array that includes a number of array elements. Further, Claim 19 includes the limitations of "populating each array element with an estimated number of display opportunities for the time period represented by array element; and dynamically replacing the estimated number of display opportunities with an actual number of media display opportunities encountered." As discussed above, both Merriman and Alberts fail to teach or suggest the use of estimates to track media display opportunities.

Additionally, both Merriman and Alberts fail to teach or suggest the use of a dynamic array to track media display opportunities. There is no discussion in Merriman of dynamic arrays. Indeed, applicants note that the Office Action has not cited any portion of Merriman as

discussing dynamic arrays. Merriman is limited to the use of a satisfaction index (SI) for determining which ad should be delivered in response to a request.

Regarding Alberts, the Office Action asserts that Alberts teaches that an ad campaign can be broken up into time periods and that each time period can then be treated with dynamic frequency scheduling so that an advertiser can control the intensity of advertising in various, smaller, time periods. (Office Action, p. 7.) In support of this assertion, the Office Action cites Col. 6, lines 44-56, of Alberts. That section of Alberts, as discussed above, is directed toward predicting the number of hits for a particular service, not tracking media display opportunities for an item of media, as called for in Claim 19. In particular, the lead-in to the cited section of Alberts teaches that "[b]ased on recurring patterns, such as when most people work, the time zones, and the day of the week, the number of hits to a particular service may be predicted based on prior experience." (Alberts, Col. 6, lines 43-46.) Thus, the segregation of time into regions, as discussed in Alberts, is used to determine/predict the number of hits for a particular service.

In contrast, media display opportunities are tracked, as recited in Claim 19, based on the estimated number of display opportunities to be encountered by the media. It is unrelated to any particular service. Alberts is limited to predicting hits for a particular service and breaking up the hours of a day into separate regions for that service.

Accordingly, for the above reasons, applicants respectfully request withdrawal of the 35 U.S.C. § 103(a) rejection of Claim 19.

d. Claims 20-24

Claims 20-24 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Merriman in view of Alberts. Claims 23 and 24 have been canceled. Claims 20-22 are dependent upon independent Claim 19. Accordingly, for the above-mentioned reasons, Claims 20-22 are likewise allowable over the combination of Merriman and Alberts. In addition, Claims 20-22 further add to the nonobviousness of the claims.

e. Claims 25-48

Claims 25-48 mirror the limitations recited in Claims 1-8 and 19-22 and are embodied as computer-readable medium claims and computer system claims. Accordingly, for the same reasons discussed with regard to Claims 1-8 and 19-22, applicants assert that the claims are patentable over the cited references. Accordingly, applicants request acceptance of new Claims 25-48.

CONCLUSION

Based on the above-referenced arguments and amendments, applicants respectfully submit that all pending claims of the present application are patentable and allowable over the cited and applied references. Because the cited and applied references fail to teach or suggest: (1) calculating a dynamic rotation frequency that is based upon a quotient of a delivery goal and an estimated number of display opportunities; (2) the use of a dynamic array, including dynamic array elements, for tracking media display opportunities; and (3) populating the dynamic array elements with estimated page views, updating those array elements with actual page views, and adjusting the remaining array elements containing estimates based upon the actual page views, applicants respectfully request withdrawal of the rejections of the claims and allowance of the present application.

If any questions remain, applicants request that the Examiner contact the undersigned at the telephone number listed below.

Respectfully submitted,

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### CERTIFICATE OF MAILING

I hereby certify that this correspondence is being deposited with the U.S. Postal Service in a sealed envelope as first class mail with postage thereon fully prepaid and addressed to Mail Stop Amendment, Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450, on the below date.

Date: November 5, 2004

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